LM-79-08 Test Report

For

RAB LIGHTING INC

(Brand Name: N/A)

170 Ludlow Ave,PO BOX 970,Northvale, NJ 07647-2305 USA

Model name(s): DLR0053(R4R8930120WS)

Report Type:	Testing and Report According to IES LM-79-2008
Type of Luminaire:	Downlights
Report Date:	2019-09-30

Prepared By:

Test & Report By:

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Review By:

Manager: Huang Qichong

1.1 Rated Values:	
Rated Voltage / Frequency	120Vac, 50/60 Hz
Nominal Power	8.0W
Rated Initial Lamp Lumen	700 lm
Declared CCT	3000K

1.2 Test Specifications:

Test item	1. Total Luminous Flux 2. Luminous Distribution Intensity 3. Luminous Efficacy 4. Correlated Color Temperature 5. Color Rendering Index 6. Chromaticity Coordinate 7. Electrical Parameters
Reference Standard	1. IES LM-79-2008 Electrical and Photometric Measurements of Solid-State Lighting Products 2. ANSI C78.377-2015 Specifications for the Chromaticity of Solid State Lighting Products 3. CIE 13.3-1995 Method of Measuring and Specifying Colour Rendering Properties of Light Sources 4. CIE 15-2004 Technical Report Colorimetry 5. IESNA LM-16-93 Practical Guide to Colorimetry of Light Source 6. IESNA TM-16-05 Technical Memorandum on Light Emitting Diode (LED) Sources and Systems
Reference Work Instruction	QD25

1.3 Test Methods

1) Photometric and Light Distribution Measurement – Goniophotometer Method:

Photometric parameters were measured using the goniophotometer and software. The ambient temperature shall be maintained at 25°C ±1°C, measured at a point not more than 1 m from the sample and at the same height as the sample. The sample was operated at 120 or rated Volts AC, 60Hz. It was stabilized before measurement was made. Luminous flux, luminaire efficacy, zonal lumen were calculated from the software taken at 1°vertical intervals and 22.5°horizontal intervals.

2) Chromaticity Measurement – Sphere-Spectroradiometer Method:

Chromaticity parameters were measured using an integrating sphere, a spectroradiometer and software. The ambient temperature condition inside the sphere was maintained at 25ºC ±1ºC. The sample measurements were made using a spectroradiometer connected by a fiber optic cable and detector through the detector port of the integrating sphere. The sample was operated at 120 or rated Volts AC, 60Hz. It was stabilized before measurement was made. Chromaticity coordinates, correlated color temperature and color rendering index were calculated from the spectral power distribution taken at 5 nm intervals over the range of 380 to 780 nm.

3) Electrical Measurements:

Electrical parameters were measured using power meters incorporated in goniophotometer or sphere-spectroradiometer system. The ambient temperature surrounding the sample was maintained at 25ºC ±1ºC. The sample was operated at 120 or rated Volts AC, 60Hz. It was stabilized before measurement was made. Voltage, frequency, current, power, power factor and total harmonic distortion were measured by and read from the power meter.

2.1 Electrical, Photometric and Chromaticity Measurements

Test date	2019-09-28	**Test Ambient:**	25.6 ºC
Test Orientation	As intended	**Stabilization Time (min)**	90
Model Number	DLR0053(R4R8930120WS)		

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
1908250037	120.0	60	0.064	7.56	0.981

Chromaticity Measurement - Sphere-Spectroradiometer Method:

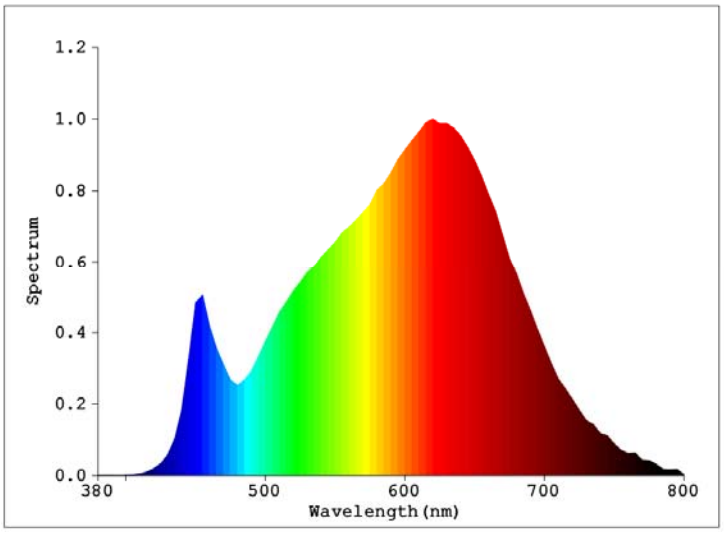
Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
CCT (K)	3038
Duv	0.00006
Chromaticity (x, y)	x=0.4343 y=0.4033
Chromaticity (u', v')	u'=0.2492 v'=0.5207
Color Rendering Index (CRI)	93.9
R9	67

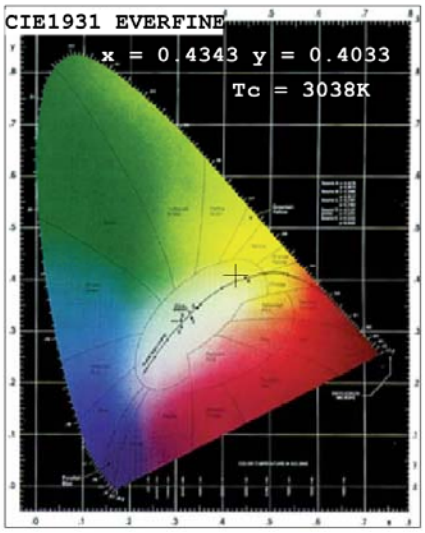
Special Color Rendering Indices			
R1	94	R9	67
R2	97	R10	91
R3	98	R11	94
R4	94	R12	80
R5	94	R13	95
R6	96	R14	98
R7	94	R15	91
R8	86	--	--

Photometric Measurement – Goniophotometer Method:

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	747.91
Luminous Efficacy (lm/W)	98.93
Beam Angle (°)	95.4
Center Beam Candle Power (cd)	319.0

Spectral Power Distribution & Chromaticity Diagram



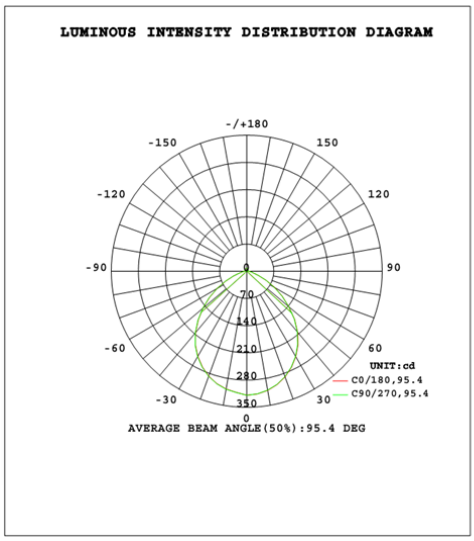


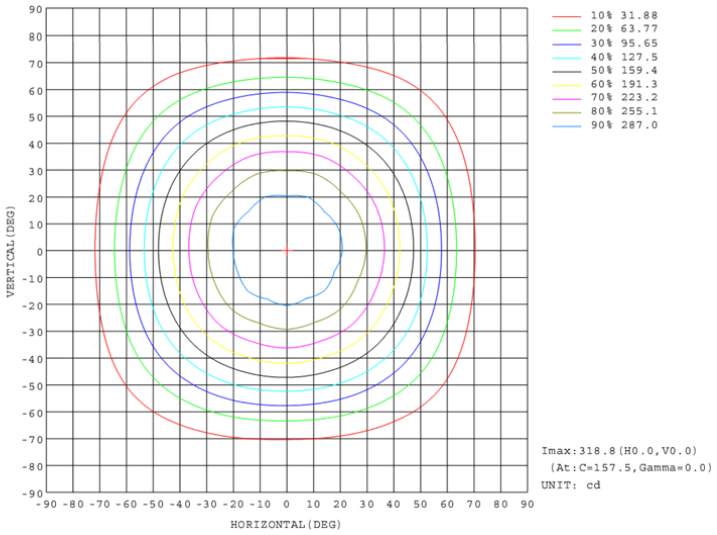
Zonal Lumen Tabulation

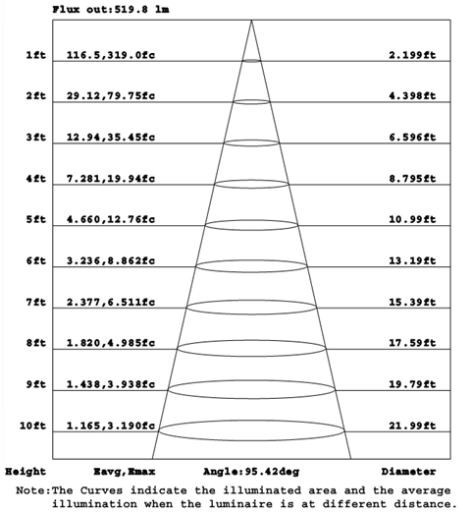
Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	240.0	32.1%
0-40	384.2	51.4%
0-60	622.9	83.3%
60-90	92.2	12.3%
70-100	38.4	5.1%
90-120	14.1	1.9%
0-90	715.1	95.6%
90-180	32.8	4.4%
0-180	747.9	100.0%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	29.9	4.0%	90-100	4.8	0.6%
10-20	84.7	11.3%	100-110	4.7	0.6%
20-30	125.3	16.8%	110-120	4.7	0.6%
30-40	144.2	19.3%	120-130	4.6	0.6%
40-50	135.6	18.1%	130-140	4.3	0.6%
50-60	103.1	13.8%	140-150	3.9	0.5%
60-70	58.6	7.8%	150-160	3.1	0.4%
70-80	23.7	3.2%	160-170	2.1	0.3%
80-90	9.9	1.3%	170-180	0.7	0.1%

Photometric Data







Note:The Curves indicate the illuminated area and the average illumination when the luminaire is at different distance.

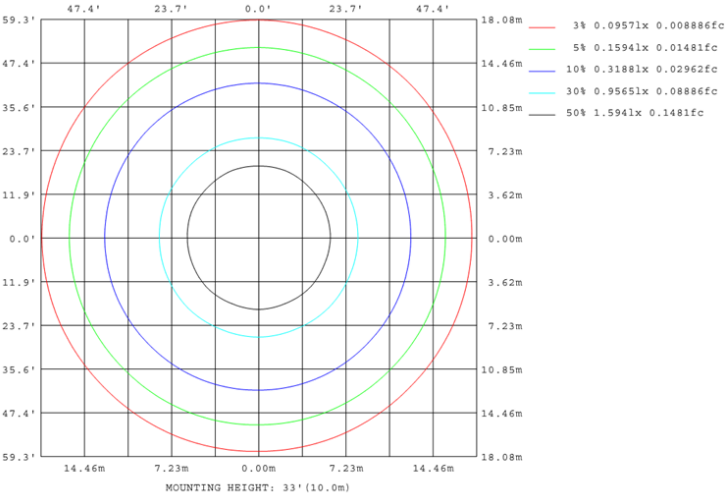


Table--1 UNIT: cd

γ (DEG) \ C(DEG)	0	22.5	45	67.5	90	112.5	135	157.5	180	202.5	225	247.5	270	292.5	315	337.5			
0	319	319	319	319	319	319	319	319	319	319	319	319	319	319	319	319			
5	317	312	316	312	317	312	317	313	313	317	313	317	313	317	313	317			
10	311	307	311	307	311	307	311	308	308	312	308	312	308	312	308	312			
15	302	298	301	297	301	298	302	299	299	303	300	304	300	303	299	303			
20	289	285	288	285	289	285	290	287	287	291	288	292	288	291	287	290			
25	273	269	272	269	272	269	274	271	272	276	273	276	272	275	271	274			
30	254	250	252	249	253	250	254	252	253	257	254	257	254	256	253	255			
35	231	228	229	227	230	228	232	231	232	235	233	236	233	235	231	232			
40	204	201	202	200	203	202	206	205	206	209	208	210	207	208	205	206			
45	175	172	173	171	174	174	177	177	178	181	179	181	178	179	176	176			
50	142	142	140	141	141	144	144	147	148	148	150	149	149	147	146	144			
55	112	112	111	111	112	114	115	117	118	118	120	119	119	117	116	114			
60	82.8	82.4	81.2	82.2	82.3	84.5	85.3	87.7	88.6	89.0	90.4	89.3	89.3	87.3	86.5	84.1			
65	55.3	55.2	54.1	55.0	55.2	57.0	57.7	59.8	60.9	61.2	62.3	61.4	61.3	59.4	58.6	56.5			
70	33.0	32.9	32.2	32.8	32.9	34.3	34.8	36.4	37.3	37.4	38.3	37.5	37.5	36.0	35.4	33.9			
75	19.5	19.5	19.1	19.5	19.5	20.2	20.5	21.4	21.9	22.0	22.3	21.9	21.9	21.1	20.8	20.0			
80	12.9	12.9	12.8	12.9	12.9	13.2	13.3	13.7	14.0	14.0	14.2	14.0	13.9	13.5	13.4	13.1			
85	8.32	8.31	8.09	8.30	8.33	8.75	8.92	9.40	9.95	9.97	10.2	9.96	9.93	9.53	9.36	8.92			
90	4.25	4.22	4.24	4.22	4.25	4.25	4.28	4.29	4.78	4.80	4.91	4.79	4.78	4.71	4.67	4.67			
95	4.07	4.06	4.08	4.07	4.08	4.08	4.10	4.09	4.63	4.62	4.61	4.62	4.63	4.63	4.62	4.62			
100	4.01	4.02	4.02	4.02	4.03	4.03	4.04	4.04	4.63	4.64	4.63	4.64	4.65	4.66	4.66	4.66			
105	4.06	4.07	4.06	4.08	4.09	4.07	4.09	4.07	4.73	4.73	4.72	4.72	4.72	4.77	4.76	4.75			
110	4.16	4.17	4.17	4.18	4.19	4.18	4.17	4.17	4.87	4.87	4.86	4.87	4.88	4.89	4.89	4.90			
115	4.32	4.32	4.33	4.33	4.34	4.34	4.32	4.33	5.03	5.04	5.03	5.04	5.05	5.06	5.06	5.08			
120	4.52	4.53	4.54	4.53	4.55	4.55	4.53	4.52	5.23	5.23	5.22	5.24	5.26	5.27	5.27	5.28			
125	4.76	4.78	4.79	4.79	4.80	4.79	4.78	4.76	5.45	5.45	5.44	5.46	5.47	5.48	5.49	5.51			
130	5.01	5.03	5.03	5.04	5.04	5.04	5.03	5.01	5.67	5.67	5.66	5.68	5.69	5.70	5.71	5.73			
135	5.27	5.29	5.30	5.31	5.32	5.30	5.30	5.28	5.90	5.90	5.88	5.92	5.92	5.93	5.94	5.95			
140	5.56	5.57	5.59	5.59	5.61	5.59	5.58	5.56	6.13	6.14	6.13	6.15	6.15	6.18	6.19	6.21			
145	5.86	5.87	5.89	5.89	5.91	5.89	5.88	5.87	6.38	6.39	6.38	6.39	6.40	6.43	6.44	6.46			
150	6.17	6.18	6.20	6.20	6.22	6.19	6.20	6.18	6.63	6.65	6.64	6.66	6.67	6.69	6.69	6.72			
155	6.49	6.50	6.52	6.53	6.54	6.52	6.51	6.49	6.91	6.92	6.91	6.94	6.93	6.95	6.97	6.98			
160	6.79	6.82	6.83	6.83	6.85	6.82	6.83	6.81	7.17	7.17	7.17	7.19	7.18	7.21	7.22	7.24			
165	7.11	7.12	7.15	7.14	7.15	7.13	7.13	7.13	7.40	7.40	7.40	7.42	7.41	7.44	7.44	7.45			
170	7.39	7.40	7.42	7.42	7.43	7.42	7.42	7.40	7.58	7.58	7.58	7.59	7.60	7.61	7.62	7.63			
175	7.62	7.62	7.64	7.64	7.65	7.64	7.65	7.64	7.70	7.70	7.70	7.72	7.71	7.73	7.74	7.73			
180	7.74	7.75	7.76	7.76	7.78	7.76	7.78	7.78	7.74	7.75	7.75	7.76	7.76	7.76	7.76	7.77			

3. Product Photo

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